

IONIC BONDING

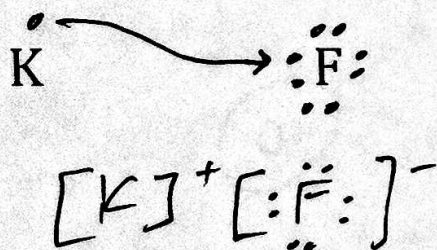
Part 1: Complete the chart for each element.

Element	# of protons	# of electrons	# valence electrons	Oxidation Number (Charge)	Metal or Nonmetal?
Potassium (K)	19	19	1	1+	M
Fluorine (F)	9	9	7	1-	Nonmetal
Magnesium (Mg)	12	12	2	2+	Metal
Iodine (I)	53	53	7	1-	NM
Sodium (Na)	11	11	1	1+	M
Oxygen	8	8	6	2-	NM
Chlorine (Cl)	17	17	7	1-	NM
Calcium (Ca)	20	20	2	2+	M
Aluminum (Al)	13	13	3	3+	Metal

Part 2: For each of the following, draw the Lewis structures, arrows to show movement of electrons, the correct criss-cross diagram, and the final chemical formula.

1. Potassium + Fluorine

Lewis Structures



Criss-cross Method

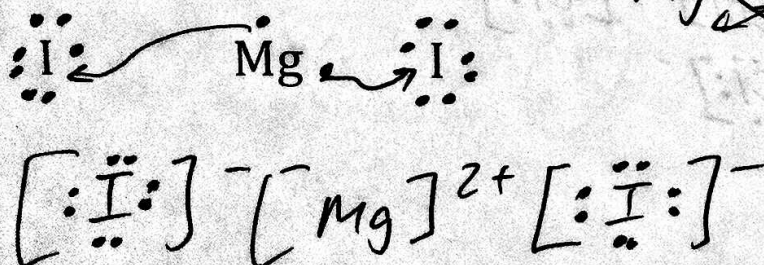


Formula

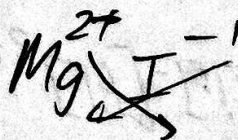


2. Magnesium + Iodine

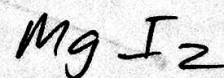
Lewis Structures



Criss-cross Method

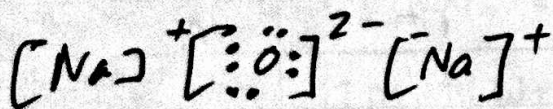
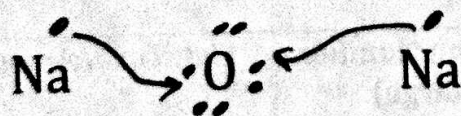


Formula

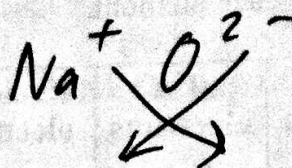


3. Sodium + Oxygen

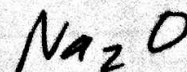
Lewis Structures



Criss-cross Method

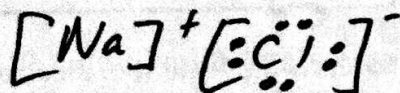


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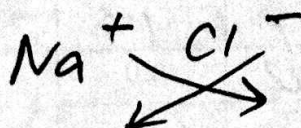


4. Sodium + Chlorine

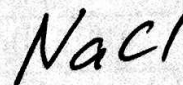
Lewis Structures



Criss-cross Method

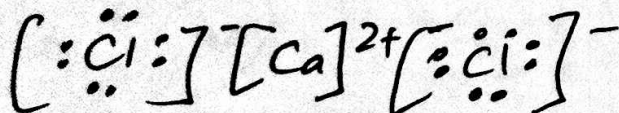
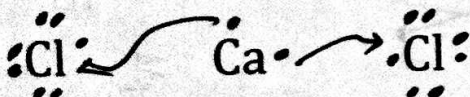


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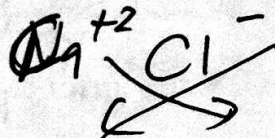


5. Calcium + Chlorine

Lewis Structures



Criss-cross Method

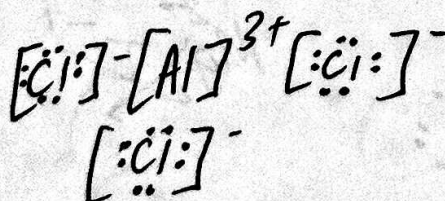
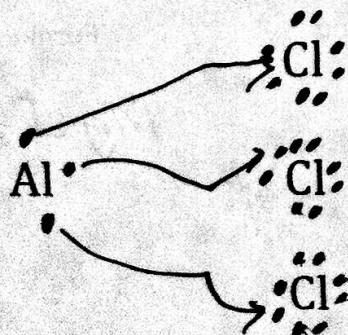


Formula

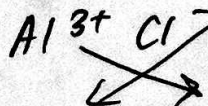


6. Aluminum + Chlorine

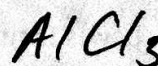
Lewis Structures



Criss-cross Method



Formula



Practice with Ions:

- The charge of one proton is +1.
- The charge of one electron is -1.
- An atom that has 2 p+ and 3 e- has an overall NET charge of -1.
- An atom that has 57 p+ and 59 e- has an overall net charge of -2.
- An atom that has 11 p+ and 10 e- has an overall net charge of +1.
- An atom that has 7 p+ and 10 e- has an overall net charge of -3.
- Why do halogens want to form -1 ions? (Hint: think about how many valence electrons they have) THEY HAVE 7 VALANCE E- AND WANT 8 E- TO OBTAIN A FULL OUTER SHELL TO DO SO THEY GAIN 1 NEGATIVE CHARGE
- Why do alkali metals want to form 1+ ions? (Hint: think about how many valence electrons they have) THEY HAVE 1 VALANCE E- AND TO BECOME LIKE THEIR NEAREST NOBLE GAS IT IS EASIEST TO GIVE 1 E- AWAY SO BY LOSING 1 E- IT HAS A +1 CHARGE
- Circle the ions that are most likely to form. Put an "X" through any ions that will NOT form.

